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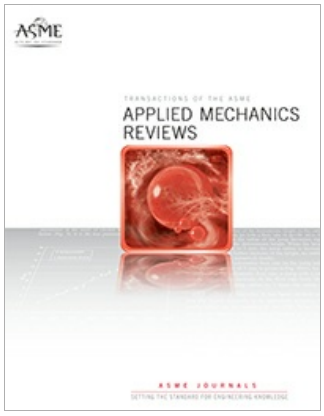

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BOOK REVIEWS

Fundamentals of Geotechnical Engineering

BM Das,, Author, AT Sawicki,, Reviewer

+ Author and Article Information

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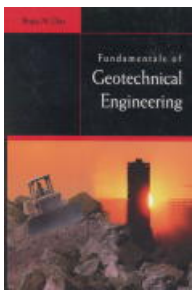

11R24. Fundamentals of Geotechnical Engineering. - BM Das *(Col of Eng and Comput Sci, California State Univ, Sacramento CA).* Brooks/Cole, Pacific Grove CA. 2000. 593 pp. ISBN 0-534-37114-0. $106.95.

Reviewed by AT Sawicki (Inst of Hydro-Eng, Koscierska 7, Gdansk-Oliwa, 80-953, Poland).

This is a typical geotechnical engineering textbook, based on highly traditional concepts and methods. It has 13 chapters which are also organized fairly traditionally. The first two chapters deal with presentation of the basic physico-chemical characteristics of soils and soil classification. Chapter 3 presents some elementary information about soil compaction. Introduction to the problems of groundwater movement (Darcy's law, hydraulic conductivity, flow nets, etc) is presented in

Chapter 4. Chapter 5 provides some basic knowledge on stresses in a soil half-space. Mainly one-dimensional problems of stress assessment in unsaturated and saturated soils, including the effect of seepage forces, are considered. An introduction to one-dimensional consolidation is presented in Chapter 6. Chapter 7 deals with some elementary methods of determination of shear strength of soils, and Chapter 8 describes the methods of so-called subsurface exploration. Subsequent chapters (9–13) are devoted to such classical geotechnical problems as lateral earth pressure, slope stability, bearing capacity and settlement of shallow foundations, retaining walls, braced cuts, and deep foundations. Several examples are included in each chapter, and some selected problems for homework assignment are also provided, with answers given in an appendix. The book contains a subject index, is nicely edited, and properly illustrated.

In the World literature, there is a number of similar geotechnical publications which are characterized by a common, highly traditional structure as that described above. The other common feature of these classical books is that the methods of applied mechanics are used very sparely. Geotechnical engineering emerges from such publications as a single-dimensional and linear world, governed mainly by empirical formulas, various coefficients and official standards. Such books do not provide understanding and consistent descriptions of various phenomena appearing in soils, but give rather a simple picture of geotechnics as a set of simple recipes, painted using 19th century methods. Probably, such traditional knowledge is sufficient for most geotechnical engineers, and that is why the author's previous educational publications were well received by instructors, students, and practitioners, as mentioned in the Preface. This book has every chance to gain similar popularity.

This reviewer did not study the book word for word, but in sampling it, some defects were found. For example, definitions of many terms, such as specific gravity, Poisson's ratio, etc are missing. The beginner can find only bare numbers without any explanation as to their meaning. Such basic terms as *strain* or *equilibrium* have not been used in the book containing nearly 600 pages. In this reviewer's opinion, soil mechanics and geotechnical engineering have not attained the same level of maturity as some other engineering subjects as, for example, structural mechanics and strength of materials, and this feature is reflected in this kind of literature.

The reviewed book also shows the great gap which exists between traditional teaching of geotechnical engineering, even on a very basic level, and developments in soil mechanics during the past half century. An interesting question is why some of these modern achievements have not been included in basic geotechnical standards and curricula? Does this mean that the old methods are still better than modern knowledge and tools? For example, granular soils exhibit some very characteristic features, such as coupling of shearing and volumetric effects etc, and this knowledge should probably be included in the basic teaching programs. However, these questions deal with the more general problem of civil engineering curriculum, and will not, therefore, be discussed in this brief review.

Overall, this book, *Fundamental of Geotechnical Engineering*, is one more addition to the classical geotechnical literature which is already very rich. It gives a good general impression and will probably find some audience.

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